SOV/26-59-5-29/47

Ancient Mercury Mines in South Fergana

ASSOCIATION: Oshskiy oblastnoy krayevedcheskiy muzey (Oshskaya
Oblast   Museum of Local Studies)(Poshka); Khaydarkanskaya
geologorazvedochnaya partiya tresta "Sredaztsvet-
metrazvedka", Oshskaya oblast', Kirgizskaya SSR
(Khaydarkan Geological Research Party of the
Trust "Sredaztsvetmetrazvedka", Oshskaya Oblast' of
the Kirgizskaya SSR) (Fedurchuk)

Card 2/2

FEDORCHUK, V.P.

Genesis of clay minerals in mercury-antimony deposits in southern
Fergana. Zap. Vses. min. ob-va 88 no.6:693-699 '59.
(MIRA 13:8)

(Fergana—Clay)

TARASOV, V.A.; FEDORCHUK, V.P.

Combining geological forms for plans and reports. Razved.i
okh.nedr 26 no.5:14-15 My '60.   (MIRA 13:7)

1. Kuraminskaya geologorazvedochnaya ekspeditsiya (for Tarasov).
2. Sredneaziatskiy nauchno-issledovatel'skiy institut geologii
i mineral'nogo syr'ya (for Fedorchuk).
                    (Prospecting)

FEDORCHUK, V.P.

Secondary deposits of mercury and antimony. Izv. AN Kir. SSR.
Ser. est. i tekh. nauk 2 no.9:149-154 '60.   (MIRA 14:7)
(Mercury) (Antiomny)

FEDORCHUK, V.P.

Basic types of structures of ore fields and deposits of the
mercury-antimony belt in southern Fergana. Trudy IGEM no.41:15-36
'61.   (MIRA 14:8)

   (Fergana--Mercury ores) (Fergana--Antimony ores)

FEDORCHUK, V.P.

Multistage distribution of low-temperature mineralization. Trudy
IGEM no.41:99-105 '61.   (MIRA 14:8)
              (Fergana—Ore deposits)

FEDORCHUK, V.P.

Types of ore indicators used in prospecting for hidden mercury-
antimony deposits. Trudy IGEM no.99:26-38 '63.   (MIRA 16:9)
                    (Mercury ores) (Antimony ores)

FEDORCHUK, V.P., KOSTYLEVA-LABUNTSOVA, Ye.Ye.; MASLOVA, I.N.

Genesis of mercury-antimony deposits. Geol. rud. mestorozh.
5 no.2:91-99 Mr-Ap '63.   (MIRA 16:6)

1. Sredneaziatskiy nauchno-issledovatel'skiy institut
geologii i mineral'nogo syr'ya, Tashkent, i Institut geologii
rudnykh mestorozhdeniy, mineralogii, petrografii i geokhimii
AN SSSR, Moskva.
                (Mercury ores)   (Antimony ores)

MATSOKINA-VORONICH, T.M., kand. geol.-miner. nauk, otv. red.;
VORONICH, V.A., kand. geol.-miner. nauk, red.; KNAUF, V.I.,
kand. geol.-miner. nauk, red.; FEDORCHUK, V.P., doktor
geol.-miner. nauk, red.; KALABINA, M.G., red.; NURATDINOVA,
M.R., red.

[Problems of the methods of plotting the metallogenetic and
prognostic maps of Central Asia; materials] Voprosy metodiki
sostavleniia metallogenicheskikh i prognoznykh kart Srednei
Azii; materialy. Tashkent, Nauka, 1964. 274 p.
                                        (MIRA 18:6)
1. Sredneaziatskoye soveshchaniye po metodike sostavleniya
metallogenicheskikh i prognoznykh kart. 1st, 1962. 2. Insti-
tut geologii i geofiziki im. Kh.M.Abdullayeva AN Uzbekskoy
SSR (for Matsokina-Voronich). 3. Glavnoye upravleniye geo-
logii i okhrany nedr pri Sovete Ministrov Uzbekskoy SSR (for
Kalabina).

FEDORCHUK, V.P.

[Methods of prospecting for hidden mercury-antimony mineralization] Metodika poiskov i razvedki skrytogo rtutno-sur'mianogo orudeneniia. Moskva, Nedra, 1964. 285 p.   (MIRA 17:11)

FEDORCHUK, V.P.

Alunite and natroalunite from the oxidation zone of the
mercury-antimony deposits of conformable type. Zap. Kir.
otd. Vses. min. ob-va no.5:33-38 '65.

(MIRA 18:7)

BOGATSKIY, V.V.; FEDORCHUK, V.P.; OZEROVA, N.A.; BRYZGALOV, N.A.; GLADKOV,
V.G.; NAMOLOV, V.A.; SANIN, B.P.

Reviews and bibliography. Geol. rud. mestorozh. 7 no.1:113-123
Ja-F '65.   (MIRA 18:4)

1. Sredneaziatskiy nauchno-issledovatel'skiy institut geologii i
mineral'nogo syr'ya, Tashkent, i Institut geologii rudnykh
mestorozhdeniy, petrografii, mineralogii i geokhimii AN SSSR,
Moskva (for Fedorchuk, Ozerova).

FEDORCHUK, V.V.

On ψ-mappings of paracompact spaces. Vest. Mosk. un. Ser. 1: Mat.,
mekh. 18 no.2:20-24 Mr-Ap '63.   (MIRA 16:6)

1. Kafedra vysshey geometrii i topologii Moskovskogo universiteta.
                                    (Topology)

FEDORCHENKO, V.S.

"Oolite" structure of magnetite in iron ores of the Krivoy Rog
Basin. Geol.zhur. 22 no.5:94-99 '62.   (MIRA 15:12)

1. Mineralogicheskaya laboratoriya instituta "Mekhanobrchermet."
   (Krivoy Rog Basin—Magnetite) (Krivoy Rog Basin—Iron ores)

L 13015-63   EPF(c)/EPR/EWP(j)/EWT(m)/BDS   AFFTC/ASD   Pr-4/Ps-4/Pc-4   RM/WW

ACCESSION NR: AP3000404   S/0191/63/000/005/0056/0058

AUTHOR: Fedorchuk, Ye. A.

TITLE: Nature of polyamide destruction with contact stress

SOURCE: Plastichsakiye massy*, no. 5, 56-58

TOPIC TAGS: polyamide, contact stress, fatigue, polycaprolactam (brand B), wear, caprone

ABSTRACT: To study fatigue damage to machine parts made of polyamide resins and the effect of load and number of revolutions, the author used roller machines in which a polyamide roller moved with practically no sliding on a steel pressure roller. The test rollers were of pressure-molded polycaprolactam (brand B): external diameter, 60 mm; internal diameter, 35 mm; width, 30 mm; toughness, H_B = 12-13 kg/sec/mm sup 2; modulus of elasticity, E = 8750 kg/sec/cm sup 2; outer surface smoothly finished. Wear was assessed in experiments with a constant rate of revolution and variable stress, and with different speeds and constant stress, normal contact pressure being calculated with the Hertz formula. Two types of damage were observed: fatigue damage proper, where the fractures spread into the deep layers of the material, putting the roller out of commission; and heat damage, in which the working surface was destroyed by melting of the caprone in the area of maximal

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L 13015-63
ACCESSION NR: AP3000404

O

tangential pressure and punching in of the surface layer. Even with liberal lubrication, however, the pitting observed with hard materials was not seen with caprone rollers. In contrast to some other plastics (e.g., phenoplasts), the durability of polyamide depends on the frequency with which pressure is applied to the part. Orig. art. has: 5 figures and 1 formula.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 10Jun63

ENCL: 00

SUB CODE: MA

NO REF SOV: 004

OTHER: 001

Card 2/2

m friction paths

resistance in monoclinic-crystalline samples. The dominating effect on abrasivity was

ENCL: 01   SUB CODE: CC, MT

FEDORCHUK, Ye.A.

Some regularities in the abrasive wear of polyamides.
Trudy NPI 153:43-48 '64.   (MIRA 18:12)

USSR/Medicine - Pharmacology

FEDORCHUK, YE. S.

Card 1/2   Pub. 38-16/18

FD-1917

Author   :

Title   : Section of Pharmacology and Toxicology, Leningrad Society of Physiologists Biochemists, and Pharmacologists imeni I. M. Sechenov [Meeting]

Periodical : Farm. i. toks., 17, 57-58, Nov/Dec 1954

Abstract : The 534th meeting of the society took place on October 27, 1953. Three papers were presented. Ye. S. Fedorchuk (Chair of Pharmacology Leningrad State Sanitation-Hygiene Institute) presented a paper "The Partici- pation of Reflex Mechanisms in the Pressor Action of Nicotine". P. Ye. Dyablova (Chair of Pharmacology Leningrad State Pediatric Medical Insti- tute) presented a paper "Preventing the Antidiuretic Effect of Histamine with Dimedrol". L. I. Tank (Division of Pharmacology, Institute of Ex- perimental Medicine) presented a paper "The Endurance of Experimental Animals to the Poisons of Glycolytic Phosphorylation of Various Periods of Postnatal Development." The 539th meeting of the society took place November 26, 1953, and three papers were presented.

I. I. Baryshnikov presented a paper "Concerning the Effect of Certain Phenylalkylamines on the Central Nervous System". V. Ye. Smirnov (First Leningrad Medical Institute) presented a paper "Judging the Anticonvul- sive activity of a number of preparations by Their Ability to Prevent Convulsions due to Electric Shock in Mice". V. S. Artem'yev (First

Leningrad Medical Institute) presented a paper "Experimental Therapy of
Cardioamine and Nicotine Induced Spasms With Cholinolytic Substances".

Institution:

Submitted :

FEDORCHUK, Ye.S.

Role of reflex mechanisms in action of nicotine on blood pressure.
Biul. eksp. biol. i med. 37 no.6:7-11 Je '54.   (MIRA 7:8)

1. Iz kafedry farmakologii (zav. deystvitel'nyy chlen AMN SSSR
prof. S.V.Anichkov) Leningradskogo sanitarno-gigiyenicheskogo
meditsinskogo instituta.
        (BLOOD PRESSURE, effect of drugs on,
            nicotine, reflex mechanism in decerebrated cats)
        (NICOTINE, effects,
            on blood pressure, reflex mechanism in decerebrated cats)

USSR / Human and Animal Physiology. Nervous System.   T
          General Problems.

Abs Jour: Ref Zhur-Biol., No 22, 1958, 102154.

Author   : Fedorchuk, Ye. S.
Inst   : Leningrad Medical Institute of Sanitation and Hy-
           giene and Scientific-Research Institute of Child-
           ren's Orthopedy.
Title   : Electrographic Analysis of the Reflectory Phenomena
           From the Chemo-Receptors of the Carotid Body on
           the Skeletal Muscles.

Orig Pub: Tr. Leningr. san.-gigiyen. med. in-ta i n.-1.
          detsk. ortoped. in-ta, 1956, 29, 360-369.

Abstract: Chemoreceptors (CR) of the carotid sinus (CS) of
          100 decerebrated cats and 10 intact rabbits were
          stimulated by perfusion of isolated CS with the
          fluid into which acetylcholine, cytisine and Na

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USSR / Human and Animal Physiology. Nervous System.   T
            General Problems.

Abs Jour: Ref Zhur-Biol., No 22, 1958, 102154.

Abstract: sulfide were introduced or with intravenous intro-
          duction of a number of substances, which reflex-
          ively affect the respiration and blood circula-
          tion mainly through the CR of the carotid region.
          In the diaphragn, diaphragmatic nerve and inter-
          costal muscles, acceleration, corresponding to the
          inspiration, of the potentials of action (PA) and
          an increase of their amplitude were observed at
          that time. In the thoracic and neck muscles, PA
          increased in the period of inspiration, and in ex-
          piration they decreased at the time when the op-
          posite changes were observed in the muscles of the
          abdominal wall. In the musculus quadriceps femoris,
          PA weakened for a short time in the beginning and
          in the second phase, during the peak of dyspnea,

Card 2/3

USSR / Human and Animal Physiology. Nervous System.   T
          General Problems.

Abs Jour: Ref Zhur-Biol., No 22, 1958, 102154.

Abstract: they increased. In the second phase, aside from
          the reflectory influence of the receptors of CS,
          a significant role is played by the irradiation
          of stimulation from the respiratory center. The
          proprioceptive reflex to stretching of musculus
          quadriceps increased during the peak of dyspnea,
          3-5 min. after introduction of substances which
          stimulate CR. Denervation of CS led to a notice-
          able decrease of potentials of respiratory muscles
          and did not essentially change the activity of
          muscles of the extremities.

Card 3/3
                              69

FEDORCHUK, Ye.S.

Effect of carotid pressoreceptors on reflexes from carotid chemo-
receptors. Biul.eksp.biol. i med. 42 no.11:11-14 N '56. (MIRA 10:1)

1. Iz kafedry farmakologii (zav. deystvitel'nyy chlen AMN SSSR
prof. S.V.Anichkov) i kafedry fisiologii (zav. - prof. Yu.M. Uflyand)
Leningradskogo sanitarno-gigiyenicheskogo meditsinskogo instituta
(dir. chlen-korrespondent AMN SSSR prof. D.A.Zhdanov). Predstavleno
deystvitel'nym chlenom AMN SSSR S.V.Anichkovym.
        (ARTERIES, CAROTID, physiology,
            eff. of carotid baroreceptors on reflexes from carotid
            chemoreceptors in animals (Rus))

FEDORCHUK, Ye. S., Cand Med Sci -- (Diss) "Effect of stimulation

of the carotid *glomerolus* upon electrical aadtivity of the skeletal

muscles." Len, 1957. 14 pp (Min of Health RSFSR, Len Sanitary-

Hygienic Med Inst), 200 copies (KL, 52-57, 112)

- 132 -

FEDORCHUK, Ye. S.

Analysis of the electrical activity of the muscles with leads
from various points in normal subjects and in poliomyelitis.
Trudy LSGMI 64:144-154 '61.   (MIRA 15:7)

1. Fiziologicheskaya laboratoriya Gosudarstvennogo nauchno-
issledovatel'skogo detskogo ortopedicheskogo instituta imeni
G. I. Turnera, kafedra fiziologii Leningradskogo sanitarno-
gigiyenicheskogo meditsinskogo instituta. Zav. laboratoriyey i
kafedroy - prof. Yu. M. Uflyand.

            (ELECTROMYOGRAPHY)   (POLIOMYELITIS)

GLADYSHEV, N.G.; OYKS, G.N.; DRUZHININ, V.P.; FEDORCHUK, Ye.V.;
GORLOV, S.M.

Mechanism of the formation of internal hot cracks in a continuous
rectangular ingot. Izv. vys. ucheb. zav.; chern. met. 8 no.5:40-44
'65.   (MIRA 18:5)

1. Novotul'skiy metallurgicheskiy zavod.

FEDORCHUK, YU. G.   DECEASED   1962/5
                                     C' 1959

                                     SEE ILC

PHYSIOLOGY

FEDOROSAK, I.

Chemical properties and active group of rhodanese and the mechanism of rhodanese action. B. Baloch, I. Fedorosak, S. Zgyerka, and A. Nubbard. Beijing [Budapest]. Acta Physiol. (in English).—Rhodanese (I) was purified from beef liver. The ability of NaOH to put the I was used to demonstrate that Na₂SO₃ enzyme to its disulfide form, and that (palladium catalyst), and is caused the of the enzyme. The proposed mechanism following R.S.H.

of the enzyme. The proposed mechanism involved the
following: $RSSR + NaCN \rightarrow RSNa + RSCN$; $2 RSNa +$
$Na_2S_2O_3 \rightarrow RSSR + Na_2S + Na_2SO_3$; $RSSR + Na_2S \rightarrow$
$RSSNa + RSNa$; $RSSNa + NaCN \rightarrow RSNa + Na_2SCN$.

Only the first reaction was specific for the catalytic synthe-
sis of thiocyanate.

(3)

FEDORCSAK, Imre; TURTOCZKY, Istvan

Ammonia assimilation of Saccharomyces cerevisiae.. Biol kozl 8
no.2:145-150 '60.

1. Eotvos Lorand Tudomanyegyetem Szarmazas- es Oroklestani In-
tezete, Budapest. Igazgato: Dr. Faludi Bela egyetemi tanar.

FEDORCSAK, Imre; TURTOCZKY, Istvan

Manometric determination of free amino group in biological materials.
Biol kozl 8 no.2:173-178 '60.

1. Eotvos Lorand Tudomanyegyetem Szarmazas- es Oroklestani Intezete,
Budapest. Igazgato: Dr.Faludi Bela, egyetemi tanar.

FEDORELIS, L. B.

LOSKUTOVA, N.N.; NEMOLOVSKAYA, Ye.; FEDORELIS, L.B.

Some cases of neural complications following rabies inoculations.
Zhur. mikrobiol. epid. i immun 28 no.2:129 F '57 (MLRA 10:4)

1. Iz Tashkentskogo instituta vaktsin i syvorotok.
(RABIES--PREVENTIVE INOCULATION) (NERVOUS SYSTEM--DISEASES)

FEDORENCHIK, A.A., mladshiy nauchnyy sotrudnik.

Spot placement of mineral fertilizers for potatoes on peat-bog soils. Trudy Inst.mel.,vod.i bol.khoz.AN BSSR 7:355-359 '56.
(MLRA 10:5)

(Fertilizers and manure) (Potatoes) (Peat soils)

USSR/Soil Science. Mineral Fertilizers   J

Abs Jour   : Ref Zhur-Biol., No 13, 1958, 58329, By O. P.
             Medvedeva

Author   : Belskiy B. B., Kulakovskaya T. N., Fedorenchik
             A. A., Kondyukova A. Kh.
Inst   : Belorussian Scientific-Research Institute of
             Melioration and Water Regulation
Title   : Doses and Methods of Application of Fertilizers
             to Newly Reclaimed Peat-Swamp Soils.

Orig Pub   : V. sb.: Osnovnyye Rezultaly nauchno-issled. ra-
             boty Belorussk. n.-i. in-ta melior. i vod. kh-va
             za 1956, g. Minsk, AN BSSR, 1957, 49-64

Abstract   : Experiments carried out on newly reclaimed peat-
             swamp bottom lands of the Slousti river (BSSR)
             have shown that all doses of phosphorus-potas-
             sium fertilizers used in the cultivation of oats,

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USSR/Soil Science: Mineral Fertilizers   J

Abs Jour : Ref Zhur-Biol., No 13, 1958, 58329, By O. P.
            Medvedeva

Abstract : corn, and perennial grasses are more effective
            when the drainage canals are 40 meters apart than
            when they are 80 meters apart. The additional
            yields at the smallest distance (40 meters) were
            as follows: oat seed--4.8; green mass of corn--
            65.7; grasses 13 centners per hectare of land.
            Higher doses of phosphorus produced greater yields
            of these crops at the 40 meter distance. Other
            experiments have shown the superiority of utili-
            zing part of P_8 (10 kg per hectare of P_2O_5) in
            preplanting; the effect of the preplanting P_8
            did not diminish even when a considerable smaller
            dose of the basic phosphorus fertilizer was used.
            Experiments with a lysimeter have shown that the
            mobility of P_8 phosphorus is greater in newly re-
            claimed peat-swamp soil thant in soil previously
            cultivated.

Card 2/2

BEREZOVSKIY, V. [Berezovs'kyi, V.]; FEDORENKO, A., kand.biol.nauk

"The guards" in the steppe. Znan.ta pratsia no.5:20 My '59.
(MIRA 12:10)

(Storks)

FEDORENKO, A., kand.biol.nauk

In a sunny country, Znan.ta pratsia no.2:15 F '59.
(MIRA 12:10)

(Azerbaijan—Water birds)

TOKACHIROV, V. A.; FEDORENKO, A.; ROSA, S. A.; ERISTOV, V. S.

"Studies of deformation properties of rock foundations of high arch and gravity dams in the USSR."

report presented at the 32nd Exec Mtg & 8th Intl Conf, Intl Comn on Large Dams, Edinburgh, 4-8 May 64.

FEDORENKO, A.D. (L'vov)

Prom the practices in aerosol disinsectization of the rolling
stock of railroads. Zashch.rast.ot vred.i bol. 7 no.5:51-52
My '62.   (MIRA 15:11)

1. Nachal'nik karantinnogo otryada L'vovskoy zheleznoy dorogi.
   (Transcarpathia--Railroads--Sanitation) (Fall webworm)

FEDORENKO, A.D.

Some shortcomings of the AG-UD-2 generator. Zashch. rast. ot
vred. i bol. 8 no.1:30 Ja '63.   (MIRA 16:5)

1. Nachal'nik karantinnogo otryada L'vovskoy zheleznoy dorogi.
                    (Spraying and dusting equipment)

FEDORENKO, A.D., agronom-entomolog

The cherry slug Caliroa limacina. Zashchita ot vred. i bol.
8 no.5:55 My '63.   (MIRA 16:9)

1. Uzhgorodskiy karantinnyy otryad po bor'be s vreditelyami i
boleznyami rasteniy.
                    (Ukraine--Sawflies--Extermination)
                    (Ukraine--Cherries--Diseases and pests)

FEDORENKO, A.D. (L'vov)

Furniture beetles. Zashch. rast. ot vred. i bol. 8 no.11:37-38
N '63.   (MIRA 17:3)

FEDORENKO, A.D., agronom po zashchite rasteniy (L'vov)

Grain moth as a pest of groats and dry fruits. Zashch. rast. ot
vred. i bol. 9 no.9:42 '64.   (MIRA 17:11)

PANSHIN, B.I.; POPOV, V.A.; FEDORENKO, A.G.; BUYANOV, G.I.; YEFIMOVA, V.S.;
        GORSKIY, K.P.

Mechanical properties of plastic foams determining their efficiency
as reinforcing fillers; efficiency of plastic foams in structures under
static load conditions. Plast.massy no.12:31-35 '63.   (MIRA 17:2)

ACCESSION NR: AP4012191   S/0191/64/000/002/0039/0043

AUTHORS: Panshin, B. I.; Popov, V. A.; Fedorenko, A. G.; Buyanov,
    G. I.; Yefimova, V. S.; Gorskiy, K. P.

TITLE: Mechanical properties of foam plastics which determine their
    efficiency as pressure fillers; 2. Efficiency of foam plastics
    in constructions during cyclic load operation

SOURCE: Plasticheskiye massy*, no. 2, 1964, 39-43

TOPIC TAGS: pressure filler, mechanical properties, foam plastic,
construction, cyclic load, internal friction, fatigue strength, vi-
bration damping, noise control, vibration insulation, glass textolite

ABSTRACT: The vibration proof and internal friction characteristics
play an important role in the use of foam plastic in constructions
which were subjected to the effect of variable loads. The first
group of characteristics is particularly important during use of foam
plastic as a pressure filler, for example in three-layered panels
and films. The characteristics of the second group determine the
fatigue strength during damping of vibration of construction elements.

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ACCESSION NR: AP4012191

Good damping properties are also needed to provide noise control and vibration insulation for apparatus and conveying devices where accuracy and comfort are important factors. It was established experimentally that the heat aging factor of foam plastic affects the vibrational stability of three-layered panels (with glass textolite facings) at increased temperatures (up to 3000). It is not the fatigue of foam plastic which is limiting at high temperatures during cyclic deformation but the change of its stability due to thermal destruction. In comparing amounts of logarithmic decrement of oscillation of foam plastic of various brands, the effect of the chemical nature of the original polymers was established. Formulas are given and experimental data is obtained for coefficients of mechanical losses of panels of a different construction with foam plastic filler. Comparison between foam plastics and vibration absorption materials of the "isol" type showed the competitive nature of foam plastic with respect to weight and damping properties. Orig. art. has: 5 Figures, 7 Equations.

ASSOCIATION: None

Card 2/2

L 12977-66   ENT(1)/EWA(h)

ACC NR: AP6001522   SOURCE CODE: UR/0302/65/000/004/0066/0068

AUTHOR: Kryzhanovskiy, O. M.; Muzykant. A. M.; Panasyuk, L. S.; Tartak, V. G.;
Fedorenko, A. G.

ORG: None

TITLE: An oscillator based on switching diodes for generating three-cycle current
pulses for magnetic logic elements

SOURCE: Avtomatika i priborostroyeniye, no. 4, 1965, 66-68

TOPIC TAGS: logic element, magnetic core storage, pulse oscillator, junction diode

ABSTRACT: A three-cycle pulse generator based on diodes has been developed by the
Institute of Foundry Problems AN UkrSSR (Institut problem lit'ya). The generator
(Fig. 1) is a ring-type three-place 1/2-wave shift register. The elements in the
register are three-winding transformers Tr_1-Tr_3 (ferrite cores with rectangular
hysteresis loop) and switching diodes D_5-D_{10} connected in series with junction diodes
D_2-D_4. The cadence pulse source for the register is an RC relaxation oscillator.
The load is connected in the cathode circuit of the switching diodes. In the ini-
tial state, diodes D_5-D_{10} are closed and capacitors C_2-C_4 are charged nearly to the
voltage of the power supply. The oscillator is triggered by prerecording a "1" in
two elements of the shift register, e.g. Tr_1 and Tr_2. With the first cycle of the
master oscillator, both "1's" are transcribed and pulses are shaped in the W_1 wind-
ings of these transformers which open switching diodes D_5, D_6, D_7 and D_8 simultane-
Card 1/3   UDC: 621.373.54
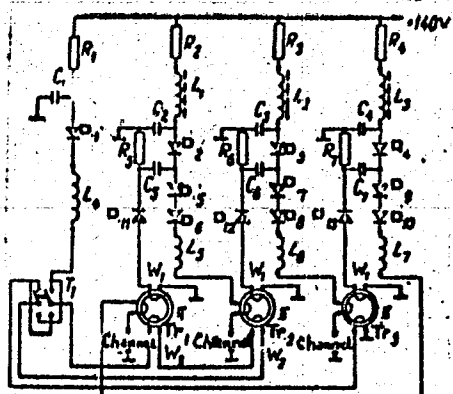
L 12977-66

Fig. 1. Principle diagram of the generator.

ously through transfer circuits D_{11}-C_5-R_5 and $D_{12}C_6R_6$. The discharge current from capacitors C_2 and C_3 generates a corresponding current pulse in the load: in circuit D_5, D_6—a blocking pulse from channel I recording a "1" in Tr_2; in circuit D_7, D_8— an advancing pulse from channel II recording a "1" in Tr_3. Upon completion of the capacitor discharge, diodes D_5-D_8 are opened and the capacitors are charged through charging resistors R_2 and R_3 and coils L_1 and L_2 connected in series with these resistors. On the next cycle of the master oscillator, diodes D_7, D_8 and D_9, D_{10} are opened, shaping a blocking pulse in channel II and an advancing pulse in channel III, respectively. These pulses record a "1" in Tr_3 and Tr_1. With the third cycle of the master oscillator, the diodes for channels I and III are opened, generating

Card 2/3

L 12977-66

ACC NR: AP6001522

a blocking pulse in channel III and an advancing pulse in channel I, and a "1" is recorded in Tr_1 and Tr_2. Recording and readout are automatic. The original "1" is recorded on the cores of transformers Tr_1 and Tr_2 by reversing the direction of current in the W_2 windings of these transformers through switch T_1. The switching diodes used in the device give advancing pulses with a current amplitude of 6 a with a load of up to 500 magnetic logic elements at a prf of 1—1.5 kc. The pulse duration is 6 μ sec with a leading edge slope of 2.5 a/μ sec. Orig. art. has: 4 figures.

SUB CODE: 09 / SUBM DATE: none / ORIG REF: 003

Card   3/3

FEDORENKO, A.G.; PANSHIN, B.I.

Determining the Poisson coefficient of plastics at reduced
and increased temperatures. Plast. massy no.11:46-48
'65.   (MIRA 18:12)

L 20798-66   EWP(j)/EWT(m)/ETC(m)-6/T   IJP(c)   JAJ/RM/WW

ACC NR: AP6005954   (A)   SOURCE CODE: UR/0191/66/000/002/0060/0062

AUTHORS: Panshin, B. I.; Fedorenko, A. G.

ORG: none

TITLE: The elastic moduli and Poisson coefficient of plastics over a wide temperature range

SOURCE: Plasticheskiye massy, no. 2, 1966, 60-62

TOPIC TAGS: acrylic plastic, heat resistant plastic, Poisson coefficient, elastic modulus, shear modulus, ultrasonic frequency/ SO-120 acrylic plastic, SO-140 acrylic plastic, SO-190 acrylic plastic

ABSTRACT: The results of experiments in determining the dynamic moduli E and G and the coefficient μ for plastics SO-120, SO-140, and SO-190 in the temperature range of -185C to the suggested upper working temperatures are given. The elastic moduli were determined by the dynamic resonance method reported by the authors (Plast. massy, No. 11, 46, 1965) at frequencies of 350--630 cps (see Fig. 1). The Poisson coefficient was calculated from these values. A value of μ = 0.49 at 160C was obtained for plastic SO-190.

Card 1/2

UDC: 678.744.335.01:539.32
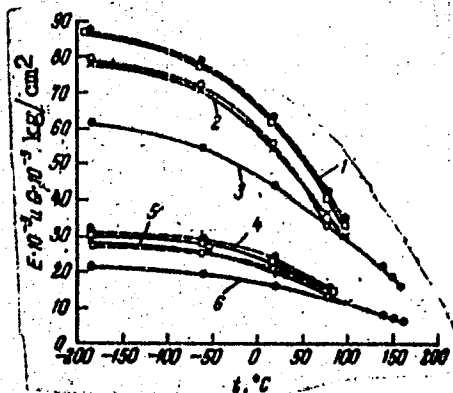
L 20798-66
ACC NR: AP6005954

Fig. 1. Moduli E and G versus temperature: 1, 2, 3 - modulus E
for SO-140, SO-120, and SO-190; 4, 5, 6 - modulus G for same
plastics; _____ initial state; ----------- oriented state.

Orig. art. has: 1 graph, 2 formulas, and 2 tables.

SUB CODE: // / SUBM DATE: none/ ORIG REF: 007/ OTH REF: 004

Card 2/2

ACCESSION NR: AP5010111 UR/0109/65/010/004/0760/0762

AUTHOR: Timirev, N. P.; Fedorenko, A. I.

TITLE: Propagation of asymmetrical waves along a conical helix with variable parameters

SOURCE: Radiotekhnika i elektronika, v. 10, no. 4, 1965, 760-762

TOPIC TAGS: helical antenna, asymmetrical wave

ABSTRACT: The case of a symmetrical-wave propagation was considered by G. Hallgren (Trans. of Chalmers Univ. of Technology, Goteborg, Sweden). This article considers a case important for the analysis of helical antennas, viz., a variable-pitch conical helix along which waves asymmetrical with respect to φ (starting from the formulas for emic field components (cylindrical and harmonic functions), an equation describing the above helix is developed. Orig. art. has: 1 figure and 21 formulas.

ASSOCIATION: none

SUBMITTED: 11May64   ENCL: 00   SUB CODE: EC

NO. REF SOV: 003   OTHER: 001

Card 1/1

9.3130,24.2000

77305
SOV/57-30-2-2/18

AUTHORS: Strel'nikov, P. I., Fedorenko, A. I.

TITLE: Investigation of Focusing Properties of a Paraboloidal
             Magnetic Lens

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol 30, Nr 2,
             pp 138-141 (USSR)

ABSTRACT: The authors investigated experimentally the feasibility
             of obtaining a strong convergent electric beam
             utilizing a magnetic field, the magnetic induction of
             which is, at any given point of the electron beam,
             inversely proportional to the diameter of the beam.
             The idea is due to Hines (see reference). The field
             has a shape represented on Fig. 1.

Card 1/7

Investigation of Focusing Properties of
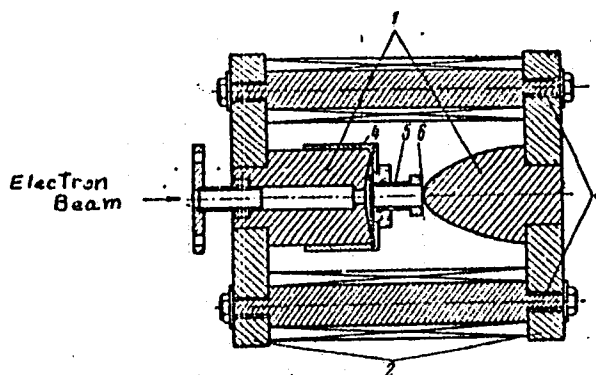a Paraboloidal Magnetic Lens

77305
SOV/57-30-2-2/18
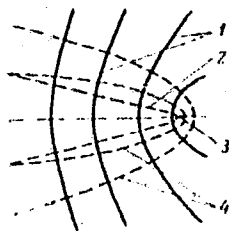
Fig. 1. Shape of the magnetic field. (1) Equipoten-
tials; (2) cone of beam; (3) focal point; (4)
field lines.

Card 2/7

The needed magnetic field can be obtained using pole
shoes shaped as paraboloids of rotation. Construction
details are given on Fig. 2.

Investigation of Focusing Properties of
a Paraboloidal Magnetic Lens

Fig. 2.   Diagram of the paraboloidal magnetic lens.
(1) Pole shoes; (2) plate yoke; (3) rods with magnetiz-
ing coils; (4) vacuum chamber; (5) cylinder for
measurements; (6) tantalum foil.

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Investigation of Focusing Properties of
a Paraboloidal Magnetic Lens

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SOV/57-30-2-2/18

The four magnetizing coils contained 10,000 ampere-
turns each. The field along the symmetry axis in the
gap between the pole shoes was measured by means of
a coil fluxmeter. The results are on Fig. 3.
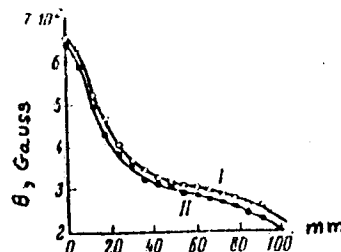
Fig. 3.   Magnetic field distribution in the gap
between the pole shoes along the symmetry axis.
(I) Without the channel in the pole shoe;   (II)
with the channel.

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Investigation of Focusing Properties of   7730
a Paraboloidal Magnetic Lens   SOV/57-30-2-2/18

Convergent and divergent electron beams were produced
using tungsten cathode impulse electron guns with 2
μsec impulse duration, one burst per second.
Beyond the anode the current in the beam was 10 a
and more, at $2-3\cdot10^{-6}$ mm Hg. The electron beam
entered the magnetic lens at a distance of 1.5 m
from the electron gun. The cording of the beam was
achieved by having a photographic film behind the
0.1 mm tantalum foil (see Fig. 2). The electron beam
striking the foil produces X-rays, which in turn
leave a trace on the film. Results of the tests are
presented on Fig. 5.

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Investigation of Focusing Properties of
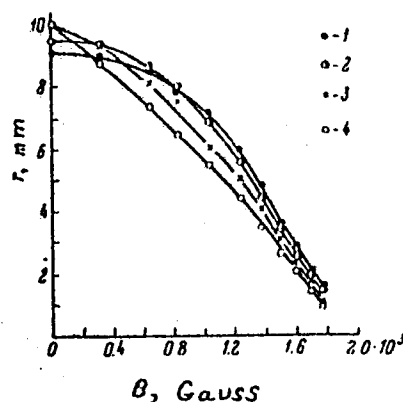a Paraboloidal Magnetic Lens

77305
SOV/57-30-2-2/18

Fig. 5. Variation of the size of the beam picture versus the magnetic field. (1) Case of a convergent beam with a $1^\circ 40'$ angle of convergence; (2) case of a convergent beam with a $2^\circ 10'$ angle of convergence; (3) case of a parallel beam; (4) case of a divergent beam with a $3^\circ 5'$ angle of divergence.

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Investigation of Focusing Properties of
a Paraboloidal Magnetic Lens

77305
SOV/57-30-2-2/18

On the basis of these results, the authors conclude
that it is possible to form conical electron beams
by means of paraboloidal magnetic lenses. Using
optimal conditions the beam can be narrowed to 1
mm diameter bringing currents up to 0.8 a/mm^2
The beam entering the magnetic lens need not be
convergent. There are 6 figures; and 1 U.S. reference.
The U.S. reference is: M. E. Hines, Proc. IRE, 40,
1, 61, 1952.

ASSOCITION: Physico-Technical Institute AS UkrSSR Khar'kov
(Fiziko-tekhnicheskiy institut AN USSR Khar'kov)

SUBMITTED: August 14, 1959

Card 7/7

9.3140 (2301, 1140, 1141)

26.2322

S/057/61/031/004/002/018
B125/B205

AUTHORS: Strel'nikov, P. I., Fedorenko, A. I., and Chernyy, B. M.

TITLE: Focusing of extended intense electron beams by additional periodic magnetic and electric fields

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 4, 1961, 394-399

TEXT: An experimental study has been made of a focusing system, in which the simultaneous action of magnetic and electric fields permits the focusing channeling of intense electron beams of constant diameter at large distances from the cathode. The energy loss involved is insignificant. The first part deals with a parallel electron beam in additional electric and magnetic fields. First, a brief description is given of the dynamics of the beam: When the cathode is located in a homogeneous, axisymmetric magnetic field, the angular velocity of the outcoming electrons according to the theorem of Bush is given by $\dot{\theta} = -\frac{\eta}{2}\left(B_0 - B_k \frac{r_k^2}{r^2}\right)$ (1), where η symbolizes the charge-to-mass ratio of electrons, B_0 the strength of

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S/057/61/031/004/002/018
B125/B205

Focusing of extended intense ...

the longitudinal field on the radius r, B_k the value of B_0 at $\dot\vartheta = 0$
(on the cathode), and r_k the radius of the electron beam leaving the
cathode. The further motion of the electrons in axisymmetric magnetic
and electric fields with regard to the forces produced by these fields
and the space charge of the beam is expressed by

$$r'' + \frac{v'}{2v} r' + \left[\frac{v''}{4v} + \frac{\eta}{8v} \left(B_z^2 - \frac{r_k^4}{r^4} B_k^2 \right) \right] r - \frac{J}{4\sqrt{2} \pi \varepsilon_0 \eta^{\frac{1}{2}} v^{\frac{1}{2}} r} = 0. \qquad (2)$$

(2).

r denotes the distance of the given electron from the axis, r' its first
and r" its second derivative with respect to z; J is the current strength
of the beam along the chosen path, and ε_0 is the dielectric constant of
the vacuum. A parallel electron beam of radius r_0 = const must satisfy
the condition

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Focusing of extended intense ...

$$\left[\frac{v''}{4v} + \frac{\eta}{8v}\left(B_z^2 - \frac{r_o^4}{r^4} B_z^2 \right) \right] v'^4 = -\frac{J}{4\sqrt{2}\,\pi_o\eta^{1/4}r_o^2}. \qquad (3)$$

B_z and v may be any arbitrary functions of z which satisfy the condition $v'' + \frac{\eta}{2} B_z^2 = $ const on slight variations of the potential v. The focusing system is calculated next: If the cathode is not screened, the magnetic field within the electron beam must satisfy the conditions

$$B_o^2 = B_k^2 \frac{r_k^4}{r_o^4} + B_\delta \frac{r_k^2}{r_o^2} \qquad (4) \quad \text{and} \quad B_\delta = \frac{\sqrt{2}\,J}{\pi_o\eta^{3/2}v_o^{1/2}r_o^2} \qquad (5) \quad \text{if the}$$

transverse components of the thermal electron velocities are taken into account. Here, B_δ is the Brillouin field strength at a distance r_o from the axis. In the case of Brillouin focusing, the magnetic field is 40% larger than B_δ. The electron beam emerging from the region of

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S/057/61/031/004/002/018

B125/B205

Focusing of extended intense ...

acceleration enters the region of action of the magnetic and the electric field. If the potential v of the electric field varies along the z-axis according to the rule $v = v_0 + \Delta v \cos \frac{2\pi}{L} z$ at $v_0 \gg \Delta v$ (L – period of the focusing system along the z-axis), then the magnetic field required for producing a parallel electron beam is given by $B_z = \sqrt{2} B_0 \cos \frac{\pi}{L} z$.

Thus, the electric field varies twice during a period of the magnetic field. A special magnetic matcher in the intermediary region is needed for loading the beam out of the region of acceleration. Fig. 1 shows the distribution of magnetic and electric fields throughout the focusing system. In the additional fields, the electron beam will be more stable in the presence of a single periodic electric field. In this case, there are neither any ranges of instability nor pulsations of the beam. The second part of the present paper is devoted to the experimental study of the focusing system. The initial shaping of the electron beam is done with the aid of a three-electrode electron gun equipped with a tungsten cathode in the form of a conical spiral of 10 mm diameter, which warrants a parallel electron beam. This electron gun supplied pulses of

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Focusing of extended intense ...

S/057/61/031/004/002/018
B125/B205

a duration of 2 µsec. The amperage in the electron beam increased to 10 a and more, and the accelerating voltage amounted to 100 kv. A pressure of $2 - 3 \cdot 10^{-6}$ mm Hg was observed inside the device while in operation. The periodic magnetic field with the root-mean-square field strength of 586 oe and the period 5.6 cm was generated by a system of short screening coils of opposite polarity (arranged along a common axis). The periodic electric field with the period 2.8 cm was generated by a set of disks alternately connected to a positive and a negative potential of 1500 v (cf. Fig. 2). The beam was examined and measured by means of a mobile fluorescent screen. The longitudinal magnetic field (strength: 415 oe) in the range of the electron gun was produced by a special solenoid, and also a focusing magnetic matcher was available. Under the optimum conditions of focusing, the diameter of the beam could be kept constant at 10 mm over the whole distance between cathode and collector. Thus, a 98% passage of the beam was guaranteed. The maximum passage of the beam could be warranted only if the numerical parameters were exactly maintained. There are 3 figures and 9 references: 1 Soviet-bloc and 8 non-Soviet-bloc. The two references to English-language publications read as follows: K. K. N. Chang, RCA Rev., 16. 1.,
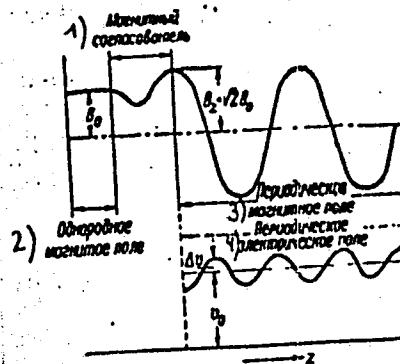
Card 5/8

21536

S/057/61/031/004/002/018
B125/B205

Focusing of extended intense ...

65, 1955. K. K. N. Chang. Proc. I.R.E., 43, 1, 62, 1955.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR Khar'kov
(Institute of Physics and Technology of the AS UkrSSR,
Khar'kov)

SUBMITTED: June 29, 1960

Фиг. 1

Card 6/8

Focusing of extended intense ...

Fig. 1: Form of the periodic
magnetic field, the
additional electric field, the
homogeneous magnetic field,
and the matching magnetic
field of the focusing system.
Legend: 1 - magnetic matcher;
2 - homogeneous magnetic field;
3 - periodic magnetic field;
4 - periodic electric field.

Card 7/8
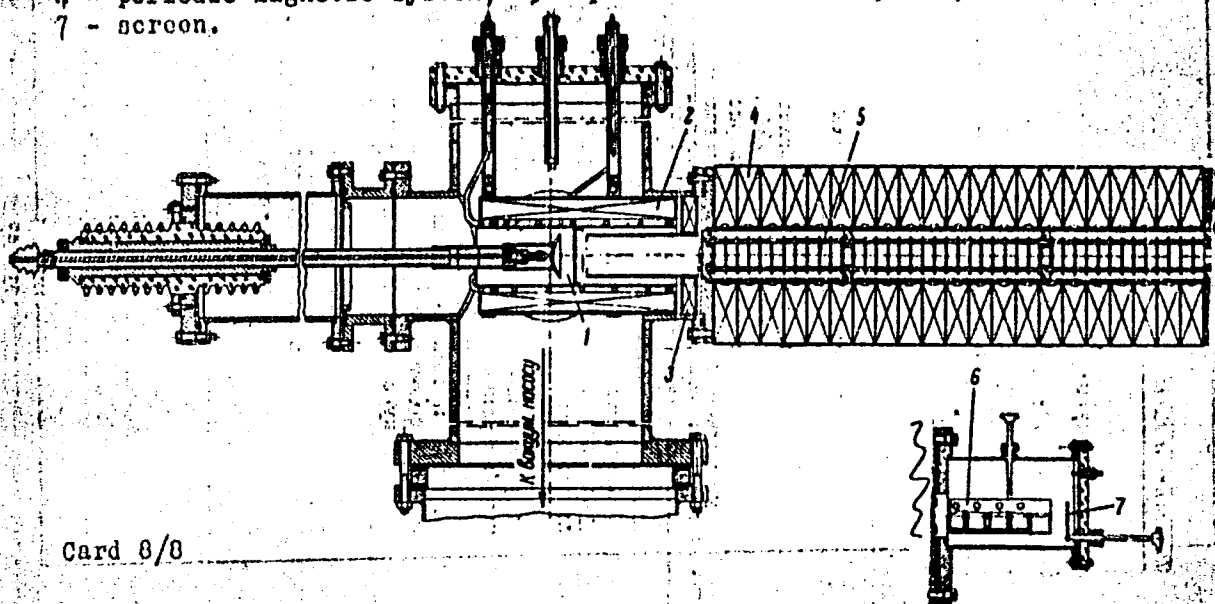
21536

Focusing of extended intense ...

Legend to Fig. 2: 1 - electron beam; 2 - solenoid; 3 - focusing matcher; 4 - periodic magnetic system; 5 - periodic electric system; 6 - collector; 7 - screen.

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FEDCHENKO, A. I.

90

PHASE I BOOK EXPLOITATION   SOV/6176

Konobeyevskiy, S. T., Corresponding Member, Academy of Sciences
    USSR, Resp. Ed.

Deystviye yadernykh izlucheniy na materialv (The Effect of
    Nuclear Radiation on Materials). Moscow, Izd-vo AN SSSR,
    1962. 383 p. Errata slip inserted. 4000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye tekhni-
    cheskikh nauk; Otdeleniye fiziko-matematicheskikh nauk.

Resp. Ed.: S. T. Konobeyevskiy; Deputy Resp. Ed.; S. A.
    Adasinskiy; Editorial Board: P. L. Gruzin, G. V. Kurdyumov,
    B. M. Levitskiy, V. S. Lyashenko (Deceased), Yu. A. Martynyuk,
    Yu. I. Pokrovskiy, and N. F. Pravdyuk; Ed. of Publishing
    House: M. G. Makarenko; Tech. Eds: T. V. Polyakova and
    I. N. Dorokhina.

Card 1/14

9C

SOV/6176

The Effect of Nuclear Radiation (Cont.)

PURPOSE: This book is intended for personnel concerned with nuclear materials.

COVERAGE: This is a collection of papers presented at the Moscow Conference on the Effect of Nuclear Radiation on Materials, held December 6-10, 1960. The material reflects certain trends in the work being conducted in the Soviet scientific research orginization. Some of the papers are devoted to the experimental study of the effect of neutron irradiation on reactor materials (steel, ferrous alloys, molybdenum, avial, graphite, and nichromes). Others deal with the theory of neutron irradiation effects (physico-chemical transformations, relaxation of internal stresses, internal friction) and changes in the structure and proper-ties of various crystals. Special attention is given to the effect of intense γ-radiation on the electrical, magnetic, and optical properties of metals, dielectrics, and semiconductors.

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The Effect of Nuclear Radiation (Cont.)   SOV/6176

Starodubtsev, S. V., M. M. Usmanova, and V. M. Mikhaelyan.
Change in Certain Electrical Properties of Boron and Amorphous
Selenium Under the Action of γ-Irradiation   355

Starodubtsev, S. V., and Sh. A. Vakhidov. Luminescence of
Crystalline Quartz Subjected to UV- and γ-Rays   .   36₄

Starodubtsev, S. V., Sh. A. Ablyayev, and S. Ye. Yermatov.
Effect of γ-Ray Flux on Absorption Properties of Vacuum
Materials   366
    Change in absorptive properties of various silica
    gels and alumosilicates, subjected to γ-ray doses of
    150,000 to 350,000 r/h, were investigated.

Trinkler, E. I. Effect of γ-Irradiation on Permeability of
Some Ferrites   370

Strel'nikov, P. I., A. I. Fedorenko, and A. P. Klynoharev.
Effect of Proton Irradiation on Microhardness of Iron and
Steel   374

Card 13/14

S/126/62/013/003/014/023
E039/E135

AUTHORS: Palatnik, L.S., Fedorov, G.V., and Fedorenko, A.I.

TITLE: X-ray examination of Zn—Sb alloys for samples of variable composition

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.3, 1962, 426-431

TEXT: According to the literature there are three chemical compounds in the Zn—Sb system, namely: $ZnSb$, Zn_4Sb_3 and Zn_3Sb_2. Only $ZnSb$ is stable at room temperature. The others are unstable at temperatures less than 200 °C and have some high temperature modifications. When alloys are condensed in vacuo it is possible to fix non-equilibrium and metastable conditions in the alloy. This is because of the high rate of cooling on condensation. Experiments were performed to investigate the stable and metastable compounds in condensed Zn—Sb for different temperatures at the condenser surface and for different annealing temperatures. For condensation at 45-95 °C the alloy forms a crystalline phase - Zn, η Zn_3Sb_2 and an amorphous

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X-ray examination of Zn—Sb alloys...   S/126/62/013/003/005/023
E039/E135

(super-cooled liquid) solution of Sb—Zn.   At 95–125 °C crystalline modification compounds ζ - Zn_3Sb_2 and γ Zn_4Sb_3 are formed. In the range 125–150 °C the stable Zn—Sb compound is formed and the metastable modifications β - Zn_4Sb_3 and ζ - Zn_3Sb_2.   A detailed investigation at temperatures higher than 150 °C was not carried out because of the selective evaporation of Zn. It is shown that at the low temperatures of condensation more of the high temperature phase is fixed in the sample. This is extremely important in the study of metastable structure in alloys. The annealing of samples of Zn—Sb with variable composition at about 300 °C followed by slow cooling destroys the metastable phase and the stable compound ZnSb forms. There are 2 figures and 1 table.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im.
V.I. Lenina (Khar'kov Polytechnical Institute imeni V.I. Lenin)

SUBMITTED: July 25, 1961

Card 2/2

FEDORENKO, Aleksandr Ivanovich; SELEGENEV, Vasiliy Yakovlevich;
    KHIZHNYAK, N.A., kand. fiz.-matem. nauk, dots., otv. red.;
    ALYAB'YEV, N.Z., red.

[Use of atomic energy in the national economy] Primenenie
atomnoi energii v narodnom khoziaistve. Khar'kov, Izd-vo
Khar'kovskogo univ., 1963. 166 p.   (MIRA 17:8)

L 16453-65   EWP(e)/EPA(s)-2/EWT(m)/EPF(n)-2/EWP(t)/EWP(b)   Pt-10/Pu-4/   IJP(c)
WW/JD/JG
ACCESSION NR: AP4042043   S/0126/64/017/006/0866/0871

AUTHOR: Palatnik, L. S.; Fedorenko, A. I.

TITLE: The growth of berillium condensates

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 6, 1964, 866-871

TOPIC TAGS: condensation, Fe base, NaCl sublayer, thickness, structure,
precipitation, whisker growth, Be

ABSTRACT: The authors investigate the most important parameters of condensation
... of the base layer, precipitation rate, thickness and their effect on
... films. ...... and X-ray
... were applied. After ......
p....ed iron base layer with an NaCl sublayer to facilitate the separation of the
film from the iron base. Film thickness was 1 to 50 microns. A baselayer tempera-
... produced a Be condensate growth according to the mechanism vapor →
... growth ......
... and vapor → liquid → crystal. Furthermore, ... appear on
... crystals which form near the surface of the condensate. At a rate of

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L 16453-65
ACCESSION NR: AP4042043

precipitation of 2 Å/sec and a base layer temperature of 450 — 700 C whisker ... was observed. At a base layer temperature of > 300C a high-rate develop- ... the condensate surface and thickening occur as a ... the preferred ... favorable oriented crystals. At base layer temperature ... < 200C, the ... have a smooth surface until they reach a thickness of several tens of ... runs as a result of a quasi-amorphous structure. Orig. art. has 5 figures.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V. I. Lenin (Khar'kov Polytechnic Institute)

SUBMITTED: 26Jun63   ENCL: 00

SUB CODE: MM   NO REF SOV: 013   OTHER: 006

Card   2/2

ACCESSION NR: AP4042808   S/0126/64/018/001/0069/0072

AUTHOR: Palatnik, L. S.; Fedorenko, A. I.

TITLE: Investigation of vacuum-deposited beryllium films

SOURCE: Fizika metallov i metallovedeniya, v. 18, no. 1, 1964,
69-72

TOPIC TAGS: beryllium film, beryllium film deposition, film deposition
rate, film thickness, film cracking, film property, substrate tempera-
ture

ABSTRACT: By evaporating 99.987% pure Be in a vacuum of $5 \cdot 10^{-5}$ mm Hg,
beryllium films varying in thickness from 0.1 to 50µ were produced
at a rate of 0.5, 2, 10, 50, or 140A/sec on a NCL-coated iron sub-
strate, along which a constant temperature gradient from 20 to 200C
was maintained. The experiments showed that at all rates of Be
deposition on the substrate at a temperature varying from 20 to 120C,
films thicker than 0.2—0.3µ crack and curl into narrow strips connec-
ted to one another and to the substrate only at spots. Cracking be-
gins at the coldest spot of the substrate (temperature = 20C). With

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ACCESSION NR: AP4042808

continued deposition, cracking extends to the hotter substrate portions
$(T_p = 100—150C)$ and, at a film thickness of 1μ, stops at a spot on
the substrate with a definite temperature T_δ (between 100 and 150C
for the deposition rates investigated), which increases as the deposi-
tion rate ω is increased. Thus, at any fixed ω, a critical film
thickness h_{cr} corresponds to each $T_p < T_\delta$ above which the film begins
to crack. With continued deposition, cracking of films thicker than
2μ extends to hotter portions of the substrate. As a result, the
film peels off the substrate in the form of narrow parallel strips
0.5—1 mm wide, at a rate which increases as ω is increased. Berylli-
um films thicker than 1μ deposited on an iron substrate at $T_p < T_\delta$
are brittle. The cracking and destruction of beryllium films during
deposition at $T_p < T_\delta$ was also observed with Be deposition on molybde-
num, copper, and other substrates, and cannot be ascribed, therefore,
to the difference in the physical properties of Be and the substrate.
The experimental data show that destruction of such films should be
ascribed to high internal stresses which originate during film growth
and result from a high density of defects in the film structure. To
obtain strong, dense Be films, substrate temperature T_p should be
20—30C higher than the specific temperature T_δ. Orig. art. has:
4 figures.
Card 2/3

ACCESSION NR: AP4042808

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V. I. Lenina (Khar'kov Polytechnical Institute)

SUBMITTED: 28Jun63   ATD PRESS: 3072   ENCL: 00

SUB CODE: MM   NO REF SOV: 004   OTHER: 003

Card   3/3

S/0053/64/083/003/0385/0432

ACCESSION NR: AP4043067

AUTHORS: Garber, R. I.; Fedorenko, A. I.

TITLE: Focusing of atomic collisions in crystals

SOURCE: Uspekhi fizicheskikh nauk, v. 83, no. 3, 1964, 385-432

TOPIC TAGS: crystal lattice structure, fast particle, radiation damage, particle collision, cathode sputtering, ion bombardment

ABSTRACT: The authors have systematized and explained as far as possible the theoretical treatments of the mechanism of atom focusing occurring in a crystal lattice when solid materials are bombarded by fast particles, and bring together the main experimental results reported in the literature. Each of the theories recently developed for the formation of radiation damage in solid materials (cascade displacement of atoms, thermal spikes, displacement zones, and others) is analyzed briefly and its advantages and shortcomings compared.

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ACCESSION NR: AP4043067

The study of atomic collision focusing, whereby bombardment of a
crystal by a charged or neutral particle results in preferential
propagation of a wave of atomic collisions along the most closely
packed directions, under the influence of the regular location of
the atoms in the lattice to various branches in physics is outlined.
It is shown to be important not only to investigations of radiation
damage, but also in connection with studies of cathode sputtering,
the sputtering of surfaces of artificial earth satellites and space
ships, destruction of metal by ion bombardment in plasma and ion
engines, and the contaminations of plasmas in thermonuclear devices.
The section headings are: 1. Introduction. 2. Theory of radiation
damage. 2.1. Cascade displacements of atoms. 2.2. Thermal spikes.
2.3. Displacement zones. 2.4. Replacement collisions. 2.5. Crowdi-
ons. 2.6. Depleted zones. 3. Focusing of atomic collisions. 3.1.
Propagation of collisions along a linear chain of atoms. 3.2. Focus-
ing and crowdion collisions. 4. Formation of focusons in phase-
centered cubic metals. 4.1. Focusing of atomic collisions in the

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ACCESSION NR: AP4043067

<110> direction. 4.2. Replacement with focusing in the <100> direc-
tion. 4.3. Replacement with focusing in the <111> direction.
4.4. Dependence of the number of focusons on the total number of
displacements. 4.5. Interaction of focusons with lattice defects.
5. Formation of focusons in body-centered cubic metals. 5.1. Focus-
ing of atomic collisions in the <111> direction. 5.2. Focusing of
atomic collisions in the <100> direction. 5.3. Focusing of colli-
sions in the <110> direction. 6. Formation and propagation of
focusons in other crystal structures. 7. Study of atomic collision
focusing of high-speed electronic computers. 8. Experimental con-
firmation of the existence of atomic collision focusing by the
crystal lattice. 8.1. Cathode sputtering of face-centered cubic
metals. 8.2. Cathode sputtering of polycrystalline face-centered
cubic metals. 8.3. Cathode sputtering of body-centered cubic me-
tals. 8.4. Cathode sputtering of diamond structure metals. 8.5.
Cathode sputtering of hexagonal metals. 8.6. Effect of nuclear
charges of moving and stationary particles on cathode sputtering.

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8.7. Effect of specimen temperature on cathode sputtering. 8.8.
Study of angular distribution of sputtered particles in the bom-
bardment of metals by ion beams. 9. Experimental confirmation of
the part played by focusing processes in radiation damage in metals.
9.1. Electron-microscope observation of radiation damage. 9.2. Di-
rect observation of radiation damage. 10. Explanation of the changes
in the properties of metals under irradiation, in terms of atomic
collision focusing. 11. Experimental methods of studying atomic
collision focusing. 11.1. Investigation of cathode sputtering in
a glow discharge. 11.2. Study of cathode sputtering by means of
ion guns. 11.3. Study of cathode sputtering with an electron
microscope. 11.4. Observation of focusons with the ion projector.
11.5. The preparation of thin single crystal and polycrystalline
metallic targets. Orig. art. has: 49 figures and 49 formulas.

ASSOCIATION: None

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ACCESSION NR: AP4043067

SUBMITTED: 00

SUB CODE: SS

NR REF SOV: 031

ENCL: 00

OTHER: 095

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L 49048-65   EWA(c)/EWT(m)/EWP(b)/T/EWP(t)   IJP(c)   JD/JG
ACCESSION NR: AP5006887   S/0181/65/007/003/0819/0822

AUTHOR: Palatnik, L. S.; Fedorenko, A. I.

TITLE: On the mechanism of formation of growth textures in beryllium condensates

SOURCE: Fizika tverdogo tela, v. 7, no. 3, 1965, 819-822

TOPIC TAGS: beryllium, thin film, film condensation, growth texture

ABSTRACT: X-ray diffraction, electron diffraction, optical, and electron micro-
scopy methods were used to study the formation of growth textures and the forms of
growth in beryllium films condensed on polycrystalline substrates. The films were
condensed by a procedure described in an earlier paper (FMM v. 18, 866, 1964). The
texture was investigated as a function of the substrate temperature, the rate of
precipitation, and the film thickness. Microphotograms of the surface films and
a plot of the dependence of the position of the texture axes and of the degree of
its perfection on the substrate temperature are presented. The results show that
the initial stage of growth texture formation is observed at a certain fixed con-
densate thickness, which increases with increasing substrate temperature. This

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effect is connected with the degree of disperseness of the condensate crystal. The effect of the crystal disperseness and of the diffusion mobility of the atoms on the growth texture formation result in an optimal substrate temperature necessary to ensure the most perfect texture in the condensate. Knowledge of the optimal temperature is of importance for the growth of single-crystal forms of different materials. Orig. art. has: 3 figures.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V. I. Lenina (Khar'kov Polytechnic Institute)

SUBMITTED: 12Sep64   ENCL: 00   SUB CODE: SS

NR REF SOV: 003   OTHER: 001

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L 5364-66   EWT(m)/EWP(i)/EWP(t)/EWP(b)   IJP(c)   JD/JG
ACC NR: AP5027387   SOURCE CODE: UR/0181/65/007/011/3163/3168

AUTHOR: Palatnik, L. S.; Fedorenko, A. I.   50

ORG: Kharkov Polytechnic Institute (Khar'kovskiy politekhnicheskiy institut im.
V. I. Lenina)

TITLE: Condensation coefficient of beryllium

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3163-3168

TOPIC TAGS: beryllium, vapor condensation, metal film, vapor plating

ABSTRACT: The condensation coefficient α of beryllium is experimentally studied as
a function of substrate temperature T_s, deposition rate ω_k, and the angle ϕ between
the molecular beam and the normal to the film surface. Vaporized Be was deposited
on a polished iron substrate with a sublayer of NaCl in a vacuum of $8 \cdot 10^{-5}$ mm Hg.
The experimental method and equipment are briefly described. It is found that film
thickness is a function of all three parameters, T_s, ω_k and ϕ. An increase in T_s
causes a reduction in thickness, which may be due to an increase in the density of

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ACC NR: AP5027387

the film, a change in the surface contour of the deposition, and a reduction in α. Diffusion processes are intensified as T_s is increased, resulting in denser condensates. A reduction in density was observed with an increase in ϕ due to increased porosity. An increase in ω_k results in increased density and smoother deposits.

Curves for α as a function of T_s show a sharp reduction in a narrow temperature interval (>300-400°C) with only a slight reduction in the condensation coefficient as the temperature is increased above this interval. The anomalous behavior of the condensation coefficient for Be is apparently due to the high ratio of the interatomic energy in the crystal lattice (Debye temperature 1000°K) to the atomic weight of beryllium (9.013). Orig. art. has: 3 figures, 1 table.

SUB CODE: MM/   SUBM DATE: 02Mar65/   ORIG REF: 008/   OTH REF: 009

Card 2/2

L 8916-66   EWT(m)/EWP(w)/T/EWP(t)/EWP(h)   IJP(c)   JD

ACC NR: AP5027144   UR/0126/65/020/004/0574/0578

AUTHOR: Palatnik, L. S.; Fedorov, G. V.; Prokhvatilov, A. I.;
Fedorenko, A. I.

ORG: Khar'kov Polytechnic Institute im. V. I. Lenin (Khar'kovskiy
politekhnicheskiy institut)

TITLE: Mechanical properties of vacuum condensates of aluminum

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 4, 1965,
574-578

TOPIC TAGS: aluminum, condensation reaction, vacuum sublimation

ABSTRACT: The article is devoted to a study of aluminum vacuum
condensates obtained by vaporization of the metal from crucibles
made of alundum and beryllium oxide. Aluminum and its alloys were
vaporized in a vacuum of 10^{-5} mm Hg. The condensates were formed
on polished and carefully cleaned open steel rings, located co-
axially with the crucible at a distance of 80 mm. A temperature
gradient of 50-550°C was created by heating one end of the ring
and cooling the other. The thickness of the condensate film was
approximately 40 microns. Vaporization of aluminum from alundum

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L 8916-66

ACC NR: AP5027144

crucibles at 1200°C was accompanied by the reaction of the material
of the crucible with the molten aluminum. At the end of 3-4 hours
there was formed a solid solution 1.5 mm thick on the walls of the
crucible. In this, the amount of the alloying aluminum oxide was
evaluated at from 8 to 10%. It was found that at a condensation
temperature greater than 450°, the aluminum oxide in the condensate
is formed in the crystalline state of gamma aluminum oxide; at
lower temperatures, in an amorphous or subdispersed state. Aluminum
oxide increases considerably the microhardness of the aluminum
condensate (up to 330 kg/mm²). Annealing at 230-490° has the
opposite effect. Samples condensed at temperatures of 450-520°
do not recrystallize during annealing. Condensates of a multi-
component alloy of aluminum, copper, magnesium, manganese, silicon,
and iron, based on aluminum reinforced with aluminum oxide, have
considerable strength (50-60 kg/mm²) and greater ductility than
condensates of aluminum obtained under analogous conditions. Orig.
art. has: 1 formula, 3 figures and 1 table.

SUB CODE: MM/   SUBM DATE: 24Jul64/   ORIG REF: 011/

OTH REF: 002

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L 10801-66   EWT(m)/EWP(w)/EPF(n)-2/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(h)

ACC NR: AT5023822 MJW/JD/GG/GS   SOURCE CODE: UR/0000/62/000/000/0374/0381

AUTHOR: Strel'nikov, P. I.; Fedorenko, A. I.; Klyucharev, A. P.

ORG: none

TITLE: Effect of irradiation with protons on the microhardness of iron and steel

SOURCE: Soveshchaniye po probleme Deystviye yadernykh izlucheniy na materialy. Moscow, 1960. Deystviye yadernykh izlucheniy na materialy (The effect of nuclear radiation on materials); doklady soveshchaniya, Msocow, Izd-vo AN SSSR, 1962, 374-381

TOPIC TAGS: irradiation, proton irradiation, rion, carbon steel, microhardness, iron microhardness, carbon steel microhardness/U8 steel, U10 steel, U12 steel, armco iron

ABSTRACT: The effect of proton irradiation on the microhardness of iron and steel has been studied. Specimens of as-supplied Armco iron and of U8, U10, and U12 carbon steels with thicknesses much greater than the depth of proton penetration, were irradiated in vacuum at 60—80C with different integrated proton fluxes with energies between 0.89 and 1.4 Mev, and subjected to microhardness tests. It was found that irradiation with an integrated flux of 1.62×10^{19} proton/cm^2 at 1.25 Mev substantially increases the steel microhardness, especially in the layer close to the specimen surface. To determine the effect of the irradiation dosage on microhardness, U12 steel was irradiated with integrated fluxes of 4.12×10^8 and
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ACC NR: AT5023822

2.36×10^{13} proton/cm^2 with a constant energy of 0.89 Mev. Experiments showed that microhardness rises with the increasing dose; however, a flux of 10^{18} or 10^{19} proton/cm^2 does not significantly raise the microhardness. The increase of proton energy linearly increased the microhardness of all tested steels, regardless of their carbon content. The irradiation of Armco iron produced similar results, but the increase of its microhardness was less pronounced than in the steels. The increase in microhardness caused by irradiation was found to be stable, and remained unchanged in U12 steel for 14 months. Irradiation with protons proved to be more effective than with neutrons, for protons do not change the microstructure of steel or iron. In the opinion of the authors, the improved microhardness is not only due to radiation damage, but also to the formation of a solid solution of atomic hydrogen with iron on steel components which occurs as the depth where protons stop after expending their energy. Orig. art. has: 6 figures and 3 tables.   [ND]

SUB CODE: 13 20 SUBM DATE: 18Aug62/ ORIG REF: 004/ OTH REF: 007

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L 36361-66   EWT(m)/EWP(t)/ETI   IJP(c)   JD/JG

ACC NR: AP6005327   SOURCE CODE: UR/0413/66/000/001/0064/0065

INVENTOR: Palatnik, L. S.; Fedorenko, A. I.; Repkin, B. M.

ORG: none

TITLE: Preparation of beryllium windows for gas-discharge counters and ionization chambers. Class 21, No. 177552

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 64-65

TOPIC TAGS: gas discharge counter, ionization chamber, beryllium window

ABTRACT: An Author Certificate has been issued discribing a method of making beryllium windows for gas-discharge counters and ionization chambers by making a beryllium-vapor condensate on a substrate. To increase the sensitivity of the sealed-off gas discharge counters and ionization chambers to soft x-rays, the beryllium vapors are condensed on a glass substrate precoated with a thin layer of NaCl of the order of 100 Å and having a temperature of 170--220C.   [LD]

SUB CODE:20,18/ SUBM DATE: 22Mar63/

Card   1/1   UDC: 539.1.074.22

ACC NR: AP7002744   SOURCE CODE: UR/0126/66/022/006/0936/0938

AUTHOR: Palatnik, L. S.; Fedorenko, A. I.

ORG: Khar'kov-Polytechnic Institute im. V. I. Lenin (Khar'kovskiy politekhnicheskiy institut)

TITLE: Surface microrelief of beryllium condensates

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 6, 1966, 936-938

TOPIC TAGS: electron microscope, beryllium, metal vapor deposition, crystal structure analysis, crystal surface / UEMV-100 electron microscope

ABSTRACT: Since the surface structure of crystals is determined by their growth kinetics, it was of interest to investigate the surface microrelief of Be condensates with the aid of an UEMV-100 electron microscope to elucidate the effect of conditions of deposition (substrate temperature T_s, deposition rate w_k and the angle φ of incidence of the molecular beam) on their structure and growth mechanism. For $T_s = \sim 120$ to $\sim 700°C$, φ from 0 to 50°C, $w_k = 5-300$ Å/sec and thickness h of Be films = 0.5 to 100 μ, it was found that the surface relief of Be films is greatly affected by T_s. For $\sim 220°C < T < \sim 350°C$ well-developed forms of

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ACC NR: AP7002744

laminar-spiral crystal growth (Fig. 1) are observed on the surface of Be condensates with h > >10 μ; this mosaic relief is due to the striving of the film toward a minimal surface energy,

Fig. 1. Surface structure of beryllium films: $T_s = 275°C$, $w_k = 40$ Å/sec, $\varphi = 0°$, magnified 3750 times

and it disappears when $T_s < \sim 200°C$ owing to the shortening of the migration path of the condensing atoms. When $T_s > \sim 350°C$ this mosaic relief likewise fades, this time owing to the intensification of diffusion processes at the film surface. This mosaic relief makes it possible to determine the dimensions and orientation of crystals and the degree of random orientation between adjacent grains, i.e. characteristics which play an important role in the physical properties of films. As for the variation of φ, it does not markedly affect the surface microrelief

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